

PHYSICAL REVIEW E

For editorial and subscription correspondence,
please see inside front cover
(ISSN: 1539-3755)

PERIODICALS
Postmaster send address changes to:
APS Subscription Services
Suite 1N01
2 Huntington Quadrangle
Melville, NY 11747-4502

THIRD SERIES, VOLUME 76, NUMBER 2

CONTENTS

AUGUST 2007

PART 1: STATISTICAL, SOFT MATTER, AND BIOLOGICAL PHYSICS

RAPID COMMUNICATIONS

Statistical physics

Fluctuation relation for a Lévy particle (*4 pages*) 020101(R)
H. Touchette and E. G. D. Cohen

Symmetry relations for trajectories of a Brownian motor (*4 pages*) 020102(R)
R. Dean Astumian

Structured and complex fluids

Diamond stabilization of ice multilayers at human body temperature (*4 pages*) 020501(R)
Alexander D. Wissner-Gross and Efthimios Kaxiras

Polymers

Interaction between two polyelectrolyte brushes (*4 pages*) 020801(R)
N. Arun Kumar and Christian Seidel

Biological physics

Quantized cycling time in artificial gene networks induced by noise and intercell communication
(*4 pages*) 020901(R)
Aneta Koseska, Evgenii Volkov, Alexei Zaikin, and Jürgen Kurths

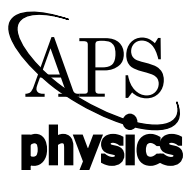
ARTICLES

Statistical physics

Phase transition of a one-dimensional Ising model with distance-dependent connections (*7 pages*) 021101
YunFeng Chang, Liang Sun, and Xu Cai

Brownian motors in nonlinear diffusive media (*6 pages*) 021102
Celia Anteneodo

One-dimensional spin-anisotropic kinetic Ising model subject to quenched disorder (*9 pages*) 021103
Nóra Menyhárd and Géza Ódor



Copyright 2007 by The American Physical Society

(Continued)



1539-3755(200708)76:2;1-5

Partition function zeros of the one-dimensional Blume-Capel model in transfer matrix formalism (9 pages)	021104
R. G. Ghulghazaryan, K. G. Sargsyan, and N. S. Ananikian	
Anomalous thermal conduction in one dimension: A quantum calculation (9 pages)	021105
Santhosh G. and Deepak Kumar	
Fokker-Planck-Kramers equations of a heavy ion in presence of external fields (9 pages)	021106
J. I. Jiménez-Aquino and M. Romero-Bastida	
Dynamic screening in a two-species asymmetric exclusion process (14 pages)	021107
Kyung Hyuk Kim and Marcel den Nijs	
What is the order of the two-dimensional polymer escape transition? (14 pages)	021108
Hsiao-Ping Hsu, Kurt Binder, Leonid I. Klushin, and Alexander M. Skvortsov	
Mirror symmetry breaking as a problem in dynamic critical phenomena (8 pages)	021109
David Hochberg and María Paz Zorzano	
Nonstationary Langevin equation: Statistical properties and application to explain effects observed in cardiological time series (10 pages)	021110
Jens Kirchner, Wolfgang Meyer, Markus Elsholz, and Bernhard Hensel	
Crossover between Lévy and Gaussian regimes in first-passage processes (9 pages)	021111
Jun-ichi Inoue and Naoya Sazuka	
Tagged particle correlations in the asymmetric simple exclusion process: Finite-size effects (17 pages)	021112
Shamik Gupta, Satya N. Majumdar, Claude Godrèche, and Mustansir Barma	
Stochastic giant resonance (5 pages)	021113
Jing-hui Li	
Multifractal statistics of the local order parameter at random critical points: Application to wetting transitions with disorder (13 pages)	021114
Cécile Monthus and Thomas Garel	
Fluctuation theorem for a single particle in a moving billiard: Experiments and simulations (5 pages)	021115
Malte Schmick, Qi Liu, Qi Ouyang, and Mario Markus	
Fractional Laplacian in bounded domains (11 pages)	021116
A. Zoia, A. Rosso, and M. Kardar	
Weakly coupled, antiparallel, totally asymmetric simple exclusion processes (13 pages)	021117
Róbert Juhász	
Obtaining pressure versus concentration phase diagrams in spin systems from Monte Carlo simulations (9 pages)	021118
Carlos E. Fiore and C. E. I. Carneiro	
Fluctuation-dissipation ratios in the dynamics of self-assembly (8 pages)	021119
Robert L. Jack, Michael F. Hagan, and David Chandler	
System dynamics revealed by recurrence quantification analysis: Application to molecular dynamics simulations (12 pages)	021120
T. E. Karakasidis, A. Fragkou, and A. Liakopoulos	
Molecular spiders with memory (9 pages)	021121
Tibor Antal and P. L. Krapivsky	

Landscape analysis of constraint satisfaction problems (<i>13 pages</i>)	021122
Florent Krzakala and Jorge Kurchan	
Phase diagram and critical exponent ν for the nearest-neighbor and next-nearest-neighbor interaction Ising model (<i>5 pages</i>)	021123
James L. Monroe and Seung-Yeon Kim	
Conjugate field and fluctuation-dissipation relation for the dynamic phase transition in the two-dimensional kinetic Ising model (<i>10 pages</i>)	021124
D. T. Robb, P. A. Rikvold, A. Berger, and M. A. Novotny	
Generalization of the escape rate from a metastable state driven by external cross-correlated noise processes (<i>8 pages</i>)	021125
Jyotipratim Ray Chaudhuri, Sudip Chattopadhyay, and Suman Kumar Banik	
Dilemma solving by the coevolution of networks and strategy in a 2×2 game (<i>7 pages</i>)	021126
Jun Tanimoto	

Equilibrium and linear transport properties of fluids

Fokker-Planck-type equations for a simple gas and for a semirelativistic Brownian motion from a relativistic kinetic theory (<i>7 pages</i>)	021201
Guillermo Chacón-Acosta and Gilberto M. Kremer	

Granular materials

Space-filling properties of polydisperse granular media (<i>12 pages</i>)	021301
C. Voivret, F. Radjaï, J.-Y. Delenne, and M. S. El Youssoufi	
Spatial force correlations in granular shear flow. I. Numerical evidence (<i>12 pages</i>)	021302
Gregg Lois, Anaël Lemaître, and Jean M. Carlson	
Spatial force correlations in granular shear flow. II. Theoretical implications (<i>14 pages</i>)	021303
Gregg Lois, Anaël Lemaître, and Jean M. Carlson	
Vertical ordering of rods under vertical vibration (<i>6 pages</i>)	021304
M. Ramaioli, L. Pournin, and Th. M. Liebling	
Granular circulation in a cylindrical pan: Simulations of reversing radial and tangential flows (<i>9 pages</i>)	021305
Oleh Baran, John J. Drozd, Robert J. Martinuzzi, and Peter H. Poole	
Topological persistence and dynamical heterogeneities near jamming (<i>9 pages</i>)	021306
A. R. Abate and D. J. Durian	

Colloidal dispersions, suspensions, and aggregates

Rigidity of disordered networks with bond-bending forces (<i>5 pages</i>)	021401
Michael Plischke	
Dynamical heterogeneity and the freezing transition in hard-sphere suspensions: Further analysis of the mean square displacement and the velocity autocorrelation function (<i>8 pages</i>)	021402
W. van Meegen and G. Bryant	
Dynamical density functional theory for anisotropic colloidal particles (<i>10 pages</i>)	021403
M. Rex, H. H. Wensink, and H. Löwen	
Rheological properties of aging thermosensitive suspensions (<i>8 pages</i>)	021404
Eko H. Purnomo, Dirk van den Ende, Jorrit Mellema, and Frieder Mugele	

Relaxation dynamics in fluids of platelike colloidal particles (<i>10 pages</i>)	021405
Markus Bier and René van Roij	
Structured and complex fluids	
Statistical and sampling issues when using multiple particle tracking (<i>15 pages</i>)	021501
Thierry Savin and Patrick S. Doyle	
Transition from single-molecule to cooperative dynamics in a simple glass former: Raman line-shape analysis (<i>5 pages</i>)	021502
N. V. Surovtsev, S. V. Adichtchev, and V. K. Malinovsky	
Proposed high-pressure calorimetric experiment to probe theoretical predictions on the liquid-liquid critical point hypothesis (<i>6 pages</i>)	021503
Manuel I. Marqués	
Low-temperature and high-temperature approximations for penetrable-sphere fluids: Comparison with Monte Carlo simulations and integral equation theories (<i>13 pages</i>)	021504
Alexandr Malijevský, Santos B. Yuste, and Andrés Santos	
Observation of a dynamic crossover in water confined in double-wall carbon nanotubes (<i>6 pages</i>)	021505
X.-Q. Chu, A. I. Kolesnikov, A. P. Moravsky, V. Garcia-Sakai, and S.-H. Chen	
Free energy landscape and cooperatively rearranging region in a hard sphere glass (<i>7 pages</i>)	021506
Takashi Yoshidome, Akira Yoshimori, and Takashi Odagaki	
Crossover of aging dynamics in polymer glass: From cumulative aging to noncumulative aging (<i>6 pages</i>)	021507
K. Fukao and S. Yamawaki	
Films, interfaces, and crystal growth	
Generalized survival in step fluctuations (<i>9 pages</i>)	021601
C. G. Tao, W. G. Cullen, E. D. Williams, and C. Dasgupta	
Viscous flow over a chemically patterned surface (<i>8 pages</i>)	021602
J. E. Sprittles and Y. D. Shikhmurzaev	
Fluctuations at a constrained liquid-solid interface (<i>18 pages</i>)	021603
Abhishek Chaudhuri, Debasish Chaudhuri, and Surajit Sengupta	
Liquid crystals	
Elastic continuum analysis of the liquid crystal polarization grating (<i>8 pages</i>)	021701
Ravi K. Komanduri and Michael J. Escuti	
Naturally occurring reverse tilt domains in a high-pretilt alignment nematic liquid crystal (<i>5 pages</i>)	021702
Ruiting Wang, Timothy J. Atherton, Minhua Zhu, Rolfe G. Petschek, and Charles Rosenblatt	
Molecular dynamics simulation of a nanoscopic nematic twist cell (<i>7 pages</i>)	021703
Leonid V. Mirantsev and Epifanio G. Virga	
Dynamics of the molecular orientation field coupled to ions in two-dimensional ferroelectric liquid crystals (<i>6 pages</i>)	021704
Robert A. Pelcovits, Robert B. Meyer, and Jong-Bong Lee	
Light-driven liquid-crystalline nonlinear oscillator under optical periodic forcing (<i>5 pages</i>)	021705
Dmitry O. Krimer and Etienne Brasselet	

Influence of latent heat and thermal diffusion on the growth of nematic liquid crystal nuclei (7 pages)	021706
B. A. H. Huisman and A. Fasolino	
Electromigration of microspheres in ferroelectric smectic liquid crystals (6 pages)	021707
I. Dierking, P. Cass, K. Syres, R. Cresswell, and S. Morton	
Polymers	
Simulations and density functional calculations of surface forces in the presence of semiflexible polymers (15 pages)	021801
Martin Turesson, Jan Forsman, and Torbjörn Åkesson	
Monte Carlo simulations reveal the straightening of an end-grafted flexible chain with a rigid side chain (5 pages)	021802
Marcel Hellmann, Matthias Weiss, and Dieter W. Heermann	
Nonequilibrium dynamics of polymer translocation and straightening (7 pages)	021803
Takahiro Sakaue	
Dynamics of critical fluctuations in polymer solutions (14 pages)	021804
A. F. Kostko, M. A. Anisimov, and J. V. Sengers	
Biological physics	
Effects of sequence disorder on DNA looping and cyclization (8 pages)	021901
Yuri O. Popov and Alexei V. Tkachenko	
Universal power law behaviors in genomic sequences and evolutionary models (6 pages)	021902
Loredana Martignetti and Michele Caselle	
Steady-state probe-partitioning fluorescence resonance energy transfer: A simple and robust tool for the study of membrane phase behavior (7 pages)	021903
Jeffrey T. Buboltz	
Response and fluctuations of a two-state signaling module with feedback (18 pages)	021904
Manoj Gopalakrishnan, Peter Borowski, Frank Jülicher, and Martin Zapotocky	
Active self-polarization of contractile cells in asymmetrically shaped domains (11 pages)	021905
A. Zemel and S. A. Safran	
Critical fronts in initiation of excitation waves (6 pages)	021906
I. Idris and V. N. Biktashev	
Flexibility of single microvilli on live neutrophils and lymphocytes (6 pages)	021907
Da-Kang Yao and Jin-Yu Shao	
Response clustering in transient stochastic synchronization and desynchronization of coupled neuronal bursters (10 pages)	021908
Alexander B. Neiman, David F. Russell, Tatyana A. Yakusheva, Andrew DiLullo, and Peter A. Tass	
Asexual and sexual replication in sporulating organisms (9 pages)	021909
Bohyun Lee and Emmanuel Tannenbaum	
Kinetics of cell division in epidermal maintenance (13 pages)	021910
Allon M. Klein, David P. Doupé, Phillip H. Jones, and Benjamin D. Simons	
First-contact time to a patch in a multidimensional potential well (9 pages)	021911
Le Yang, David Sept, and A. E. Carlsson	

Thermal diffusion by Brownian-motion-induced fluid stress (<i>6 pages</i>)	021912
Jennifer Kreft and Yeng-Long Chen	
Role of molecular tilt in thermal fluctuations of lipid membranes (<i>6 pages</i>)	021913
Eric R. May, Atul Narang, and Dmitry I. Kopelevich	
Equilibrium shape degeneracy in starfish vesicles (<i>7 pages</i>)	021914
Xavier Michalet	
Transition dipole strength of eumelanin (<i>10 pages</i>)	021915
J. J. Riesz, J. B. Gilmore, Ross H. McKenzie, B. J. Powell, M. R. Pederson, and P. Meredith	
Direct measurements of the stabilization of single-stranded DNA under tension by single-stranded binding proteins (<i>5 pages</i>)	021916
K. Hatch, C. Danilowicz, V. Coljee, and M. Prentiss	
Theoretical investigation of finite size effects at DNA melting (<i>11 pages</i>)	021917
Sahin Buyukdagli and Marc Joyeux	
Simulating invasion with cellular automata: Connecting cell-scale and population-scale properties (<i>11 pages</i>)	021918
Matthew J. Simpson, Alistair Merrifield, Kerry A. Landman, and Barry D. Hughes	
Firing-rate response of linear and nonlinear integrate-and-fire neurons to modulated current-based and conductance-based synaptic drive (<i>15 pages</i>)	021919
Magnus J. E. Richardson	
Internetwork and intranetwork communications during bursting dynamics: Applications to seizure prediction (<i>9 pages</i>)	021920
S. Feldt, H. Osterhage, F. Mormann, K. Lehnertz, and M. Żochowski	
Simple combined model for nonlinear excitations in DNA (<i>5 pages</i>)	021921
D. L. Hien, N. T. Nhan, V. Thanh Ngo, and N. A. Viet	
Diffusion in a dendritic spine: The role of geometry (<i>6 pages</i>)	021922
A. Biess, E. Korkotian, and D. Holcman	
From rigid base pairs to semiflexible polymers: Coarse-graining DNA (<i>17 pages</i>)	021923
Nils B. Becker and Ralf Everaers	
Phase diagram of chiral biopolymer Wigner crystals (<i>17 pages</i>)	021924
Gregory M. Grason and Robijn F. Bruinsma	
Simple model of cytoskeletal fluctuations (<i>12 pages</i>)	021925
C. Metzner, C. Raupach, D. Paranhos Zitterbart, and B. Fabry	
Torque and dynamics of linking number relaxation in stretched supercoiled DNA (<i>13 pages</i>)	021926
John F. Marko	
Investigation of the effects of fine structure on the nanomechanical properties of pectin (<i>8 pages</i>)	021927
M. A. K. Williams, A. T. Marshall, P. Anjukandi, and R. G. Haverkamp	
Dynamics of sustained reentry in a loop model with discrete gap junction resistances (<i>7 pages</i>)	021928
Wei Chen, Mark Potse, and Alain Vinet	
Modeling emergent tissue organization involving high-speed migrating cells in a flow equilibrium (<i>13 pages</i>)	021929
Tilo Beyer and Michael Meyer-Hermann	

BRIEF REPORTS**Statistical physics**

- Fidelity, dynamic structure factor, and susceptibility in critical phenomena (*4 pages*) 022101
 Wen-Long You, Ying-Wai Li, and Shi-Jian Gu
- Effect of interaction range on phonon relaxation in Fermi-Pasta-Ulam β chain (*4 pages*) 022102
 Santhosh G. and Deepak Kumar
- Three-dimensional Ising model with nearest- and next-nearest-neighbor interactions (*4 pages*) 022103
 Rosana A. dos Anjos, J. Roberto Viana, J. Ricardo de Sousa, and J. A. Plascak
- Fermi-Pasta-Ulam phenomenon for generic initial data (*4 pages*) 022104
 A. Carati, L. Galgani, A. Giorgilli, and S. Paleari

Equilibrium and linear transport properties of fluids

- Hyperbolicity of exact hydrodynamics for three-dimensional linearized Grad's equations (*4 pages*) 022201
 Matteo Colangeli, Iliya V. Karlin, and Martin Kröger